

SHREY JOSHI

Doctoral Candidate
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OBJECTIVE

ACADEMIC QUALIFICATION

Degree	Institution	Specialization	Year	Grade
Doctor of Philosophy (PhD)	INP Grenoble, France	Cavitation simulation using SPH	2015-2018 (expected)	
Master of Science	Delft University of Technology, Netherlands	Solid and Fluid Mechanics	2013-2015	8.2/10
Bachelor of Technology	NIT Allahabad, India	Mechanical Engineering	2008-2012	7.8/10
Intermediate school	Hartmann College, India	Science	2008	83%
High School	Hartmann College, India		2006	81%

AREA of INTEREST

1. Computational fluid dynamics.
2. Multiphase Flows.
3. Cavitation

WORK EXPERIENCE

Doctoral candidate at SIMaP and INP Grenoble

September 2015-August 2018 (expected)

Grenoble, France

Supervisors: Prof. Marc Fivel, Prof. Jean Pierre Franc and Dr. Giovanni Ghigliotti.

The objective of the project is to develop a Multiphysics Smoothed Particle Hydrodynamics (mesh less method) formulation to solve cavitation. The SPH method will be developed as a single solver for both solid and fluid within one code. It would include solving for phase change and bubble dynamics in the fluid side and material loss on the solid side which in other words is a Multiphysics SPH solver. The SPH method exhibits some key advantages over the conventional FVM-FEM coupled solvers: firstly the need to re-mesh while solving a Fluid Structure Interaction problem is eliminated as the method itself is meshless and secondly since both fluid and solid domains use the same solver which eliminates a need of coupling the two separately.

Graduation thesis student, TNO

27-Oct-2014 July 2015

Delft, Netherlands

Supervisors: Prof. Ruud Henkes, TU Delft & Ir. Pejman Shoeibi Omrani, TNO.

Liquid loading is an increasing problem with aging gas wells that produce some liquids, one of the techniques used to remove the liquid is to add surfactant to the well. The effect of surfactant on the well performance is estimated by conducting a small scale test called the Bikerman test. The assignment is to experimentally identify the effect of velocity, pressure and surfactant concentration on surfactant performance in the Bikerman setup and identify the appropriate standardization of the test.

Intern, TNO

15-Jul-2014 - 16-Oct-2014

Delft, Netherlands

Supervisors: Prof. Aris Twerda, TU Delft & Ir. Pejman Shoeibi Omrani, TNO

The objective of the assignment was to implement a viscoelastic model (FENE-P) to a 2-phase flow (a gas-liquid wavy stratified flow). The viscoelastic model used in this work was developed for single phase turbulent flows and predicts important parameters like velocity, turbulence and pressure drop with sufficient accuracy but no such model is present for multi-phase flows. The work was carried out on ANSYS FLUENT with some additional User defined functions.

Graduate engineer, Tata Motors

04-Aug-2012 - 24-Jul-2013

Lucknow, Uttar Pradesh, India

I was a part of graduate program where college graduates are trained in various departments for 12 months; I received trainings in production, sales and marketing, design engineering, R&D.

Research Assistant, Fluid Mechanics laboratory, National Institute of Technology, Allahabad

24-May-2010 - 20-Jul-2012

Allahabad, Uttar Pradesh, India

Supervisors: Prof A.R Paul & Prof. Anuj Jain.

I was appointed research assistant at fluid mechanics laboratory in my bachelor university, I worked as a part-time research assistant during the last two years of my bachelor studies. I worked on a variety of projects including, car aerodynamics, environmental aerodynamics, flow through diffuser ducts, flow through human respiratory system etc. During the two years I was the co-author of 2 International journal publications and 7 conference papers. The work was both experimental and computational (mostly done on ANSYS FLUENT).

RESEARCH PROJECTS

1. Flow control using piezoelectric actuators in a 3-D bifurcated transitional duct.

Department of Applied Mechanics, NIT Allahabad, India.

- Bifurcated ducts are usually used in jet aircrafts to pressurize air by diffusing just before the air compressor; these ducts are generally transitional ducts. We considered an elliptical to circular transition and applied piezoelectric actuators to energize flow to control separation and secondary flow.

2. Computational study of drag reduction and vortex shredding on a cylinder in unbounded flow using upstream control rods.

Department of Applied Mechanics, NIT Allahabad, India

- The objective was to reduce drag over a cylinder by using upstream rods of different size and shape in tandem and staggered arrangement; different shapes (triangular, square and circular) and sizes of upstream rods were used. A number of cases were tested to conclude which arrangement gives the minimum drag, a few were selected for further analysis using Large Eddy Simulation technique to study vortex shredding from cylinder and upstream rod and the interaction of vortices from the two bodies.

3. Aerodynamic effect of rear spoiler and vortex generator on high speed passenger cars.

Department of Applied Mechanics, NIT Allahabad, India

- The objective was to optimize the rear spoiler angle and vortex generator positions (and types) for drag reduction and traction improvement. In the first stage an experimental investigation was carried out in a wind tunnel using hot wire anemometer and 5-hole probes. The experimental work was then used as a base for the computational analysis. After validating the computational code with our experimental data a number of cases were tried out to figure out the best configuration of rear spoiler and vortex generator. Oil flow and smoke flow visualization were used to study the flow around the car in detail.

4. Active flow control using vortex generator jets in bifurcated duct.

Department Applied Mechanics, NIT Allahabad, India

- Use of vortex generator jets for avoiding flow separation and to reduce pressure distortion and pressure losses at the outlet of the duct was studied in the project, experiments included variations of jet angles in 2 perpendicular planes at the inflexion plane of the duct, so as to estimate the improvement in the flow quality, the later stage of the project comprised of computational work on the same and trial of some new cases so as to improve the depth of analysis.

5. CFD modeling of airflow in human respiratory system.

Department Applied Mechanics, NIT Allahabad, India

- The project includes the study of various generations of human respiratory system, a 3-D printed model was developed and experiments were performed, the data was then used to validate computational code and further analysis of the human respiratory system using computational techniques was carried out. The objective was to determine the areas under high stress (disease prone areas) and study of medical devices used to improve such conditions.

6. Calibration of shear stress measuring instrument and its application in various flows.

Department Applied Mechanics, NIT Allahabad, India

- The objective was to calibrate and standardize a shear stress measuring instrument; flush mounting probe used with CTA system was calibrated using Preston's tube and was applied in measurement and analysis of flow parameters.

PUBLICATIONS

International Journal

- Akshoy Ranjan Paul, **Shrey Joshi**, Aman Jindal, Shivam P. Maurya, and Anuj Jain, "Experimental Studies of Active and Passive Flow Control Techniques Applied in a Twin Air-Intake," The Scientific World Journal, Hindawi Publication, vol. 2013, Article ID 523759, 8 pages, 2013.
- Akshoy Ranjan Paul, **Shrey Joshi**, Aman Jindal, Ajit Verma, Shivam P Maurya, , Anuj Jain, "Drag reduction of a passenger car using flow control techniques", International Journal of Automotive Technology, Springer, Accepted for publication.

International Conferences

- Akshoy Ranjan Paul, **Shrey Joshi**, Aman Jindal, Shivam P. Maurya, Ajit Verma, "Large Eddy Simulation of Vortex Shedding with Triangular Cylinder ahead of a Square Cylinder", Proceedings of the 8th Asia-Pacific Conference on Wind Engineering (APCWE-VIII), Dec. 10-14, 2013, Chennai, Paper ID: 241, pp. 299-302, ISBN No. 9789810780128.
- Akshoy Ranjan Paul, **Shrey Joshi**, Aman Jindal, Shivam P Maurya, Prakhar K. Tiwari, Anuj Jain, "Effects of Upstream Rod's Shape on Drag of a Square Cylinder", Proceedings of the 3rd International Conference on Mechanical, Automotive and Materials Engineering (ICMAME'2013), 16-17 January 2013, Hong Kong (China), Paper ID: 113811, pp. 35-40, ISBN No. 9789382242239.
- Akshoy Ranjan Paul, **Shrey Joshi**, Aman Jindal, Ajit Verma, Shivam P Maurya, , Anuj Jain, "Active Flow Control in Twin Air-Intake using Vortex Generators Jets", Proceedings of the 9th International Conference of Mechanical Engineering (ICME),18-20 December 2011, BUET, Dhaka
- Vivek Kumar Srivastava, Anuj Jain, Akshoy Ranjan Paul, **Shrey Joshi** "CFD modeling of airflow in human respiratory system", Proceedings of the 9th International Conference of Mechanical Engineering (ICME),18-20 December 2011, BUET, Dhaka

National Conferences

- **Shrey Joshi**, Aman Jindal, Vikrant S. Yadav, Prakhar K. Tiwari, Akshoy R. Paul, Anuj Jain, "Calibration Methodology of Wall Shear Stress Sensor", Proceedings of 40th National Conference on Fluid Mechanics & Fluid Power (FMFP-2013), 12-14 December 2013, NIT Hamirpur, Himachal Pradesh, Paper code: 290.
- Akshoy Ranjan Paul, **Shrey Joshi**, Aman Jindal, Shivam P. Maurya, Anuj Jain, "Comparison of Active and Passive Flow Controls: A Case Study in Bifurcated Air-Intake ", Proceedings of 38th National Conference on Fluid Mechanics & Fluid Power (FMFP-2013), 15-17 December 2011, NIT Bhopal, Madhya Pradesh.
- Akshoy Ranjan Paul, Pradeep K. Niranjana, **Shrey Joshi**, Anuj Jain, Ajit Verma., " Computational Analysis of Rear Spoiler on a Sedan Car ", Proceedings of 38th National Conference on Fluid Mechanics & Fluid Power (FMFP-2013), 15-17 December 2011, NIT Bhopal, Madhya Pradesh

EXTRA-CURRICULARS

Awarded Marie-Curie fellowship

- Was awarded the prestigious Marie-Curie fellowship under the CaFE project on cavitation. Included funding from the European Commission for 3 years.

Best Graduate Netherlands Award 2015

- Amongst the top 10 finalist for the Best Graduate Netherlands award.

Young European Associated Researcher (YEAR) conference, HORIZON 2020, Helsinki, Finland

- Attended the YEAR conference on 11th-12th May 2015 at Helsinki. The conference promotes young researchers to come up with bold and innovative ideas.
- Presented my idea on "Integration of ocean energy techniques for affordable and cleaner energy".

Philips Innovation Awards 2014, Netherlands

- My idea won the best 10 entries award at Philips Innovation Award 2014, Netherlands.

Entrepreneurial experience at YES! Delft

- 6 month entrepreneurial experience at YES! Delft (start-up incubator at TU Delft), my idea and team was selected to be one of the 10 teams participating in "Ready to Start Up" course out of 25 teams that applied for it. We received trainings for leadership and entrepreneurial ability development and met young successful entrepreneurs who shared their amazing experiences with us.

Mountaineering and trekking

- Mountaineering and trekking experience to foothills of Himalayas in winter 2012, climbed to Dharwa top, 13615 ft / 4150 m. Part of 10 days "Outbound leadership training" with Tata Steel Adventure Foundation (TSAF), India.

Sports

- Member of the athletics and football team in school
- Member of athletics team in college.

Event coordination and volunteering

- Event coordinator at Avishkar 2011, a technical fest at NIT, Allahabad.
- Anchor for Euphoria 2009 (hostel day) and Swagat 2009 (fresher's orientation program) at NIT, Allahabad.
- Volunteer at Culrav 2009, a cultural fest at NIT, Allahabad.

SOFTWARES KNOWN

Programming Languages: C, C++, FORTRAN and MATLAB

Software: SPHYSICS, MATLAB, ANSYS FLUENT, GAMBIT, SOLID WORKS, CFX, CATIA, PARAVIEW.

PERSONAL PROFILE

Nationality	Indian
Sex	Male
Marital Status	Single
Date of Birth	17 th April 1991
Present Address	29 avenue du 8 Mai 1945, Saint Martin D'Herès, 38400, Grenoble, France